Volunteer Firemen

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Volunteer Firemen

Volume 8 Number 11

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THE cover picture this month (*International*) shows the burning of the Fall River, Massachusetts, plant of the Firestone Rubber and Latex Products Company on October 11-12, 1941. This great fire destroyed a tremendous stock of baled crude rubber stored as a defense reserve. A report of this fire appears on page 7.

NOW is the time for the fire departments in the northern areas of the United States and Canada to give some attention to preparations for winter fire fighting. Most motor car operators are familiar with the precautions that must be taken to keep the family bus running when thermometer readings are low. With fire apparatus these things cannot be left to chance.

Cold weather means heavier loads on batteries, indicating the need for frequent testing and top-notch condition. Winter lubrication is also important. Fire apparatus should be housed in reasonably warm quarters to guard against freezing. Fire departments that expect to do much pumping seldom bother with anti-freeze in the cooling systems of their apparatus. Motors are left running when the equipment is outside during cold weather. In the winter, booster hose is usually carried dry and care is taken to drain valves and connections that may be subject to freezing. Soda-acid and foam extinguishers must be protected against freezing. Anti-freeze solutions must not be added to these extinguishers although the solutions may be used in plain water type extinguishers. To make 2½ gallons of anti-freeze solution giving protection down to zero requires 2 gallons and 1 pint of water and 6¼ pounds of granulated or flake 75 per cent calcium chloride.

EACH winter the average fire department has a lot of trouble with fires in chimneys and flues. Not the least perplexing part of the problem is the matter of creosote forming in smoke pipes. This problem was No. 1 item on the program of the recent British Columbia Fire College held at Kamloops, B. C. One of the volunteer firemen of Kamloops is the head of a heating company. He answered a call to a residence where the occupant complained that she could not get her range to burn as there was no draft although the chimney and stovepipes had been cleaned out three months before. The smokepipes were taken down and four lengths which ran horizontally were found to be choked as shown in the accompanying photograph. The bottoms of the pipes were eaten through.

As is quite common in the Province of British Columbia, the range in question burned sawdust as fuel. The stove was kept burning slowly 24 hours a day and the gases generated passed off in the form of creosote-laden smoke into which cold air was injected at the check draft opening. The creosote was condensed out of the smoke and ran down into the horizontal smoke pipes, where it bubbled into the light frothy form it takes when heated and eventually completely filled the pipe. At the same time the moisture and acid in the creosote ate out the pipe until it was like tissue paper and crumpled under the hand.

A remedy for this situation was agreed upon during the discussion of this matter at the fire college. It was the consumption of all the gases generated by combustion and a very restricted use of the check draft, using a wing damper in the pipe. If the gases were allowed to burn off instead of pass off as smoke, no creosote would be formed and no deposit would be made. The use of enameled pipe was also recommended due to its being impervious to the action of the acid in the smoke.

View of smoke pipe blocked by creosote in three months' time.

As has been pointed out previously in VOLUNTEER FIREMEN, fire department records indicate that wood fuel is responsible for by far the greater portion of chimney fires. This is undoubtedly due to creosote deposits just mentioned.

The N.F.P.A. has recognized also, that proper installation and design of smoke pipes and stove pipes is an important fire safety measure. At the last annual meeting, held in Toronto in May, the N.F.P.A. tentatively adopted a Good Practice Standard for the installation of Smoke Pipes and Stove Pipes. This standard covering such details as materials, joining of sections, proper supports, length of pipe, and cleaning was published in the volume of Advance Reports to the 45th Annual Meeting, sent to N.F.P.A. members with the April 1941 Quarterly.

LAST month seven departments with 64 men joined the Volunteer Firemen's Section for the first time. Thirty-five departments with 738 men renewed membership. This makes a total enrollment of 729 departments and 14,867 men. The following departments are newly enrolled:

Los Angeles Firemen's Relief Association, Inc., Los Angeles, California.

Newport Beach Fire Department, Newport Beach, California.

Perris Volunteer Fire Department, Perris, California.

Erving Paper Mills, Erving, Massachusetts.

New Market Volunteer Fire Company, New Market, New Jersey.

Mountainair Fire Department, Mountainair, New Mexico.

Middle River Sanatorium, Hawthorne, Wisconsin.

THE estimated U. S. fire loss for September, 1941, according to the National Board of Fire Underwriters is $24,668,000. This figure is based on notices of incurred loss received by company members of the Board, plus an allowance for unreported and uninsured losses. Losses for the first nine months of 1941 are $4,028,620 more than the losses for the same months last year. The following table shows the losses for the first nine months of both 1940 and 1941.

	1940	1941
January	$36,260,650	$26,470,000
February	34,410,250	26,102,000
March	29,788,800	31,471,000
April	26,657,190	29,330,000
May	23,446,590	25,637,000
June	19,506,000	24,943,000
July	20,322,800	23,698,000
August	20,722,100	24,122,000
September	21,198,000	24,668,000
Total 9 months	$232,312,380	$236,441,000

FIREMEN'S TRAINING-1941

Annual Summary Shows That Over Half the States Now Have Definite Measured Courses of Training

TRAINING activities for firemen reached a new high in 1941. Not only has the number of firemen receiving training increased but the quality and scope of the training have improved. More than 30,000 firemen are known to have completed one or more units of training in definite measured courses of instruction during the past training season. Such courses were given in at least twenty-five of the forty-eight states.

While complete returns for all states are not yet in, a total of 65,183 firemen from 4,083 fire departments are already reported to have received training under state-wide and provincial firemen's training programs this year. These figures do not include attendance at regular city fire department drill schools not conducted in connection with state training programs. There are now only four states which do not report some form of state-wide firemen's training program. These are Arizona, South Carolina, Utah, and Idaho. Representatives of fire departments in several of these states attended training courses given in neighboring states thus indicating a desire for training.

Annual short courses or "fire colleges" were held this year in thirty states and two Canadian provinces. Two states adding this feature to their training programs for the first time were Connecticut and Ohio. In many states the annual short courses are tending to become schools of advanced training. The course frequently includes conferences of instructors, fire marshals and other groups.

WORK OF FIELD INSTRUCTORS

Additional to Comprehensive and Short Courses

	No. Depts. Visited	Av. Hours Instruction Each Dept.	Total Men Reached
Alabama	12	—	—
Delaware	—	—	—
Illinois	167	4	924
Indiana	81	15	1785
Kentucky	36	20	650
Nebraska	30	12½	747
New Mexico	17	10 or more	201
Ohio	—	—	—
Oklahoma	109	6	4043
Quebec	260	5	5200
Tennessee	—	—	—
Texas	217	—	9209
Virginia	—	—	—
Washington	—	—	—
Wyoming	—	—	—
Total	929		22759

In addition to the annual short courses which are mostly held on a state-wide basis, regional or district short courses were held in at least eight states. However, this type of course appears to be on the decline as the state training programs are being developed to take definite comprehensive training programs direct to the local departments by means of field instructors, zone schools, or by local drillmasters who have received teacher-training and have qualified at a state fire school.

Comprehensive training programs might be termed the backbone of a systematic firemen's training program. These programs are in general directed by the state department of education, usually through its vocational division. The courses are designed to give each fireman a well rounded training. Each course covers a certain number of major subjects or teaching units. A fireman gets credit as he qualifies for each unit. Upon completion of the entire course each man receives a certificate from the state authorities sponsoring the course. In a number of states firemen are first given an introductory or "sampler" course before they start detailed training in each of the unit subjects.

A good example of a comprehensive training course is that conducted in Oklahoma. In that state the individual fireman first takes the ten hour introductory training course. He is then ready to begin work on the first of the 15 unit courses, totalling 538 hours of instruction. It is not expected that the average fireman will complete this entire amount of training in any one year. He may complete only one unit each year. The first four units: (1) forcible entry and minor extinguishment practices, (2) ladder practices, (3) hose practices, (4) salvage and overhaul practices, give the fireman training in fundamental operations. Subsequent units are designed to train men as skilled fire fighters and prepare them to become officers.

In addition to the types of training already discussed, fourteen states and the Province of Quebec employed field instructors to give elementary training to fire departments not reached by other forms of training. This instruction is in addition to the work done by field instructors in conducting comprehensive or regional training courses. A total of 929 fire departments are reported to have received an average of from 4 to 20 hours of instruction in the various states. In addition to the fourteen states listed in the accompanying table Nevada has employed a field instructor to begin work this Fall.

ANNUAL SHORT COURSES

	Years Held	Departments Represented	1941 Attendance
Alabama	5	31	75
Arkansas	2	—	—
British Columbia	8	—	—
Colorado	11	43	176
Connecticut	1	42	65
Florida	12	76	220
Georgia	7	66	250
Illinois	17	169	584
Indiana	8	112	785
Iowa	17	121	443
Kansas	12	57	156
Kentucky	4	—	—
Kentucky, Defense School	1	98	411
Louisiana	12	42	73
Maryland	12	75	311
Maine	2	13	58
Michigan	13	64	168
Minnesota	14	41	175
Missouri (S. E.)	12	22	91
Missouri (Cent.)	9	63	157
Montana	2	21	57
Nebraska	4	51	206
New Mexico	12	37	127
North Carolina	13	74	279
Ohio	1	—	1000
Oklahoma	16	28	120
Ontario	2	—	—
Oregon	12	—	222
Pennsylvania	3	—	246
South Dakota	12	—	400
Texas	12	283	522
Washington	11	—	—
West Virginia	11	—	160
Wisconsin	8	76	306
Total Attendance		1705	7843

ONE of the most important developments in firemen's training work this year was the organization of a new N.F.P.A. Committee on Firemen's Training. W. Fred Heisler of Oklahoma A. & M. College, Stillwater, is chair-

REGIONAL OR DISTRICT SHORT COURSES

(One Day to Twe Weeks)

	No. Schools	Cities Represented	1941 Attendance
Georgia	4	33	341
Indiana	6	—	781
Iowa	8	—	—
Nebraska	10	120	877
North Dakota	4	—	713
Oklahoma	3	11	33
Ontario	3	51	248
Oregon	4	—	200
Total Attendance	42	227	3193

man and Chief J. W. Just, Director, Fire Service Extension, University of Maryland, is vice-chairman and R. J. Douglas, Fire Service Instructor, School of Technical Training, Oklahoma A. & M. College, is secretary. A list of N.F.-P.A. members from all parts of the United States and from Canada, have consented to serve on the committee. These members represent most of the national organizations cooperating in firemen's training work. The scope of the committee's activities is defined by the following scope statement: "To promote effective training of firemen in cooperation with other agencies, and develop text material for such training."

ONE important stimulus to increased activity in firemen's training during the current year has been interest in fire defense. Following the fire bomb raids on London and other English cities last winter, firemen and the public in general came to realize the important part that trained firemen must play in so-called passive defense. In almost every part of the United States and in Canada fire departments are being trained in the handling of incendiary bombs and wartime fires. In addition, thousands of civilians have received training as auxiliary firemen or as air raid wardens. This current survey of firemen's training does not attempt to record the tremendous amount of training of auxiliary firemen and other fire defense training now underway.

Two outstanding general conferences on firemen's training were conducted during 1941. The first was the Annual Fire Department Instructors' Conference held in Memphis, Tennessee in January. This conference, sponsored by the Fire Prevention Department of the Western Actuarial Bureau of Chicago, and the Memphis Fire Department, attracted key men engaged in firemen's training from 27 states. A detailed report of this conference was published in the February 1941 issue of VOLUNTEER FIREMEN. Another training conference was held during the last week of July at Stillwater, Oklahoma. A group of leaders in the firemen's training field met at that time to validate text material prepared for use as the official firemen's training texts in a number of states cooperating in the preparation of such training texts.

As previously explained in VOLUNTEER FIREMEN, the texts are published by Oklahoma A. & M. College and are also made available under different covers to other states desiring to use the material developed through this interstate conference method.

COMPREHENSIVE TRAINING COURSES

	Total Hours in Course	No. Units in Course	No. Units in Which Instruction Was Given 1940-41	Depts. Represented in Classes	No. Men Completing One or More Units 1940-41
Alabama	—	7	4	—	—
Arkansas	—	11	2	15	—
California	—	—	8	—	3610
Connecticut	167	3	3	36	84
Delaware	—	—	—	—	—
Florida	180	6	6	76	153
Georgia	24	19	—	1	77
Indiana	240	10	5	94	1955
Iowa	—	—	—	8	—
Louisiana	15	12	12	123	1419
Maryland					
Advanced	69	23	23	88	653
Basic	75	25	25		
Massachusetts					
Zone Schools	20-24	—	—	—	469
Local Schools	10-20	—	—	37	1075
Michigan					
Town Schools	24	12	12	17	—
Fire Administration Course	100	—	—	4	60
Montana	28	6	—	—	—
Nebraska	—	—	—	—	—
New Hampshire	—	—	—	—	—
New Jersey	100	19	19	80	480
Bergen County	30	—	—	29	300
New Mexico					
Introductory	10	1	1	17	328
Advanced	—	—	—		
New York					
County Defense Schools	—	10	10	—	6780
Green County Program	30	10	10	—	350
Nassau County Program	14	—	6	64	6707
Sullivan County Program	30	10	10	—	400
Ulster County Program	30	10	10	—	325
Ohio	44	—	—	—	—
Oklahoma					
Introductory	10	1	1	7	78
Advanced	538	15	11	67	861
Pennsylvania					
Fundamental	45	4	4	402	3735
Advanced	30	4	4	3	
Vermont	20	6	6	19	482
Virginia	30	—	—	37	600
West Virginia	60	12	12	18	407
Total Attendance				1222	31388

A conference of firemen's training leaders held at Stillwater, Oklahoma, in July, to work on standard training texts. Included in the picture are leaders in the Oklahoma firemen's training program and leaders from cooperating states of Alabama, Arkansas, Indiana, Maryland, and New Mexico.

YOU CAN GET FIRE APPARATUS BUT GADGETS AND BRIGHT WORK ARE OUT FOR THE DURATION OF THE EMERGENCY.

VOLUNTEER departments which have been hoping for a new piece of apparatus that would take first prize in the county firemen's parade next year can get a machine that will push out water with the best of them, but hardly one that will take a beauty prize. New apparatus will have more of the utilitarian beauty of an army tank, than the accustomed resplendence of red and chrome rivaling a float in the Mardi Gras. In fact, some who have seen the advance models of the new utilitarian fire apparatus, streamlined for defense, say that you will hardly be able to any longer refer affectionately to your favorite pumper as "she." The new kit will have about the same amount of beauty as a top sergeant who has just done twenty years in the tropics.

There will be no clanging bells on the new fire trucks, no shining hat or hand rails, no bright chrome surfaces to polish. The new apparatus will be all fire-fighter from bumper to tailboard. It will be built to do the job like a prize-fighter who has taken off every bit of surplus poundage.

Also taboo for the duration of the emergency are trick pieces of apparatus, freakish combinations, enclosed apparatus, and other types requiring special designs that might delay production. The apparatus industry is being streamlined to turn out as many standard fire fighting pieces as possible. Such standardization on the more important types such as pumpers, aerial ladders and quads, should enable manufacturers to increase production to meet the urgent need of many communities for new fire equipment.

THESE great changes in fire apparatus styles are all in the interest of national defense. Government authorities realize that fire apparatus is essential to fire defense. They are prepared to grant adequate priorities to permit the manufacture of much needed fire apparatus. However, apparatus built in normal times used a lot of metals just for show purposes and non-essential items. Such metals are needed for defense production. Accordingly, the fire apparatus manufacturers were called into the picture. With their cooperation a careful check was made to see where metals could be saved in the manufacture of new apparatus without seriously affecting the performance of the new equipment. The result of such conferences was a bulletin sent out to each manufacturer of motorized fire apparatus by the U. S. Office of Production Management. Effective October 6, 1941, the bulletin requests each manufacturer not to make or deliver types of apparatus agreed upon as non-essential during the emergency. It also outlines just where each essential metal should be used in the manufacture of apparatus.

The manufacturers have been asked not to deliver quintuple combinations (aerial ladder and pumper combinations), service ladder trucks, squad, salvage or reserve cars. Cities needing a new ladder truck will have to choose either an aerial ladder or a quad (pumper - ladder combination). From comments commonly heard in fire department circles it does not appear that many tears will be shed over the passing of the service ladder truck as a type of apparatus. Such trucks lack the automatic aerial ladder and are without the fire fighting equipment provided on a quad truck.

Manufacturers have also been requested not to make or deliver any models of pumpers except those meeting the following underwriters' ratings: 500-600 gallon pumpers, 750 gallon pumpers, and 1,000-1,250 gallon pumpers. This has the effect of prohibiting pumpers of both very small or very large capacities.

Forest fire trucks, crash trucks or booster tank trucks may not have a tank capacity above 500 gallons. Pump capacity for such apparatus may be not less than 100 or more than 400 gallons per minute. It is also specifically indicated that no equipment delivered after October 6 may have a bell. Sirens and horns are permitted.

The following restrictions govern the use of essential materials in the building of new apparatus. These materials are not to be used except as follows: Primary aluminum, only in ammeter needles and speedometer caps and pistons on hand on October 6; secondary aluminum, only in pistons and oil pans, in zinc die castings, and in bearings to the extent its use is essential to the functioning of the bearings; copper, only in radiator cores, electrical equipment, sirens, horns, gauge lines, inner coolers and fittings; brass, only in suction hose couplings, suction tube caps, discharge valve caps, sirens, horns, engine bearings, valves, relief valves and governors, and in pumps if iron cannot be substituted; nickel, only in piston pins for engines over 125 horse-power, engine exhaust valves and pump drive unit shafts, in pump shafts if chromium steel cannot be effectively substituted, in cylinder iron if not in excess of 1½ per cent, in heavy duty gears, and plating to the extent that its use is essential to the efficient functioning of the gears and parts plated; chromium, only in relief valves and seats and highly stressed steel parts including axles, shafts, gears, springs and motor valves, and in plating where essential to the functioning of the parts; cadmium, only in plating where necessary to the functioning of parts; tin, only in so far as essential in brass and bronze necessary for pump bodies, impellers, rotors, bearings, brushings and solder; zinc, only in carburetors, fuel pumps and speedometers, in plating and coating, and in windshield wipers where essential to functioning; steel, only in those parts where its elimination would impair the efficient functioning of the parts; synthetic rubbers, only in valve packing, pump packing, hydraulic hose lines and fuel pump lines.

New Civilian Fire Defense Advisory Committee

AN advisory committee has been appointed by the U. S. Office of Civilian Defense to assist it in fire defense matters. Brigadier General L. D. Gasser, Assistant U. S. Civilian Defense Director, opened the first meeting of this committee which was held in Washington on September 18 and 19. The committee, asked to choose its own officers, named as Chairman N.F.P.A. Honorary Member George W. Booth, Chief Engineer of the National Board of Fire Underwriters. William T. French, OCD Fire Defense Section, was elected Executive Secretary. Other N.F.P.A. members on the committee include Vice President D. J. Price, U. S. Department of Agriculture, Horatio Bond, Chief Engineer, N.F.P.A., Chief W. Hendrix Palmer of Charlotte, N. C., official representative, International Association of Fire Chiefs, George J. Richardson, Secretary, International Association of Fire Fighters, R. E. Wilson, Associate Manager, National Bureau for Industrial Protection, W. W. Dean, Office of Quartermaster General, U. S. Army, and Lieutenant Commander Harold K. Hughes, Bureau of Yards and Docks, U. S. Navy. Battalion Chief Daniel A. Deasy, New York Fire Department officer attached to the Office of Civilian Defense and W. E. Bittner, Priorities Division, Office of Production Management, complete the committee.

Biggest Fire Since World War I

Army and N.F.P.A. Experts Recently Warned Against Conditions at Defense Plant Responsible for the Huge Loss

At right, firemen called from a 50-mile radius made a successful stand during the later stages of the fire and saved exposed buildings. Below, in spite of intense radiated heat during the height of the fire, the railroad warehouse at the left was saved largely by the water curt in thrown by the deluge guns.

THE great fire of October 11-12, which destroyed over 15,000 tons of U. S. Government owned crude rubber stored at the Fall River, Massachusetts, plant of the Firestone Rubber and Latex Products Company, was the largest fire loss in any American city since Salem, Massachusetts, was destroyed by a conflagration in 1914, the first year of the first World War.

This one fire wiped out one-tenth of the entire stock of crude rubber stored in the United States as a defense reserve. More than half of the estimated $13,000,000 loss from this fire was due to destruction of the stored rubber.

As this important loss occurred just as VOLUNTEER FIREMEN was about to go to press, this account is necessarily preliminary in that complete detailed reports of agencies investigating the fire are not yet available.

That this tremendous loss should have occurred was no surprise to the N.F.P.A. Executive Office or to U. S. Army Officials interested in the protection of plants vital to defense. Major Carl C. Richmond, Plant Protection Division, U. S. Army, was concerned that certain defense contracts of the Firestone plant were endangered by the conditions at the plant. In response to a request from Major Richmond for comment on the possible fire hazard at the plant, Robert S. Moulton, N.F.P.A. Technical Secretary, in a confidential letter written four days prior to the fire, reported to the War Department that the quantity of rubber stored at the plant constituted a serious fire hazard.

This tremendously valuable stock of crude rubber was stored in former cotton mill buildings which had been abandoned to the city for taxes and had subsequently been taken over by the Firestone plant. The buildings in which the rubber was stored were some seventy years old and were no longer suitable for manufacturing occupancy. Sprinkler systems were very old, having much smaller pipe than is common at the present time. As it was believed that the floors of the old buildings could not hold the weight of the stored rubber, floors had been removed and the rubber bales were piled up in the bottom story for a height equal to a two or three story building. With the removal of the floors the only sprinkler protection remaining in the storage areas was from the line of sprinklers at the roof level. This protection was obviously inadequate to cope with fire involving thousands of tons of crude rubber. To make matters worse, cutoffs were not properly maintained between the various buildings of the plant and fire doors lacked adequate closing mechanism and were in some cases blocked open.

The fire started in a building of an adjoining section of the plant devoted to the manufacture of rubber products including barrage balloons, gas mask facepieces, and auto seat cushions. The fire is stated to have occurred shortly after 10 P. M. in a large drying oven where auto seat cushions are dried after the curing process. Employees fought the fire with chemical extinguishers and it is reported that the automatic sprinklers operated. However, the hazard was such that the sprinkler system was unable to cope with the fire due to the large number of heads opened.

An alarm was telephoned to the fire department at 10:41 P. M. Within about 15 minutes it is stated that firemen were driven from the building by the rapid spread of the flames. A second alarm was sounded at 10:59 P. M., followed by a general alarm at 11:26 P. M. bringing a total of 12 engine and hose companies and 5 ladder companies. Shortly afterward calls for help were sent out to surrounding cities and towns as the fire began to spread to adjoining units including the buildings where the crude rubber was stored.

Between about midnight and 6 A. M. the next morning help arrived from some fifty paid and volunteer fire departments of southeastern Massachusetts and nearby Rhode Island.

Massachusetts departments sending men or apparatus included: Assonet, Attleboro, Barnstable, Boston (4 pieces), Brockton (3 pieces), Dedham, Dighton, Easton, Mansfield, Marion, Middleboro, New Bedford (3 pieces), North Attleboro, Norwood, Rockland, Somerset (2 pumpers), Stoughton, Swansea (2 pumpers), Taunton (3 pieces), Westport, and Weymouth.

Rhode Island departments sending aid included: Barrington, Bristol, East Providence, Greenville, Greenwood, Lakewood, Middletown, Newport (2 pieces), Newport Naval Station, North Kingston, North Scituate, North Tiverton, Pawtucket, Portsmouth, Providence (6 pumpers and 1 ladder truck), Warren, and Warwick (2 pieces).

With the arrival of these outside forces an effective stand was made.

SOME DEFENSE FIRE PROBLEMS

Typical Ones Handled by Underwriters' Laboratories Cover Hose Coupling Metals, Heating Equipment, Magnesium Hazards and Lightning Protection for Ammunition Dumps.

By ALVAH SMALL,

President, Underwriters' Laboratories, Inc.

It is well known that Fire Prevention Week is observed on the anniversary of the great Chicago fire of 70 years ago. Less well known is the role this fire played in the formation of a great fire testing laboratory which is now helping the nation solve technical problems of fire defense. Some of these problems are enumerated by this laboratory's distinguished president in the following, digested from the text of an MBC Fire Prevention Week broadcast. Mr. Small is serving his second term as president of the National Fire Protection Association.

OUT of Chicago's experiences in the great fire 70 years ago and in its safeguarding of the world's treasures at the Columbian Exposition in 1893, have flowed specific measures now of world-wide significance in keeping the ash heap down. The responsibility for safeguarding the irreplaceable art objects and other precious things displayed at the First Chicago World's Fair inspired setting up one of the first large scale programs of fire protection. Inspections were made during the construction of the buildings. Good housekeeping was demanded. A watchman's service was put in operation. Fire extinguishing equipment was installed. Such measures accomplished their joint purpose and an example was thus made which has inspired similar conservation in all subsequent fairs, including Chicago's Century of Progress. Nowadays the application of these and related programs is recognized as a function of good management in any progressive enterprise, public or private. Whatever the business or the service, the defense emergency makes it the patriotic duty of management and of each good citizen privately to prevent interference with production by fire's confusion and waste!

At the World's Fair in '93 electricity received a real boost along its road to public acceptance. The Fair featured a grand display of incandescent bulb outline lighting, then new. In those days the use of electricity was fraught with hazard, safeguarding which was the object of some of the very earliest investigations in fire protection engineering.

Underwriters' Laboratories developed out of the safeguarding of fire hazards at the Columbian Exposition. Its founder was W. H. Merrill, a leader in the early days of the National Fire Protection Association. The Laboratories' first home was over the horses of Insurance Patrol Station No. 1 on West Monroe Street. Its personnel consisted of Mr. Merrill, a helper, and a clerk. Its equipment was a table and chairs, a work bench and $300 worth of testing apparatus. His idea of a testing laboratory for the determination of acceptable performance of manufactured products from the fire hazard viewpoint supplied a recognized need and soon was sponsored by the National Board of Fire Underwriters. This sponsorship still continues, although today Underwriters' Laboratories, Inc., is completely self-supporting.

Operated always as a non-profit organization, Underwriters' Laboratories formulates safety and performance standards for products of many kinds and tests and classifies them as to their bearing upon losses from fire, accident, or crime. Its work is conducted at three testing stations, in Chicago, New York, and San Francisco; and further from 200 inspection centers in all parts of the United States and Canada. Upwards of 350,000 items of materials, devices, and systems employed in the construction and equipment of buildings have been classified. These products prevent fires from occurring, announce the outbreak of fire, confine fire, extinguish it, and in other ways safeguard life and property. More than 500 million such articles are produced annually in over 4,000 factories. These are the general, every-day activities of Underwriters' Laboratories, Inc.

THE ordinary, peace-time functions of all fire prevention and fire protection organizations are greatly expanded today. Fire defense is an important phase of National Defense. Most fire defense problems that arise are in fields in which existing organizations have had previous experience. Each is aiding defense in its special way. You may be interested in some of the special jobs about which I am free to tell you that Underwriters' Laboratories has.

A recent assignment was from OPM. Fighting fires from air raid bombing is shown by the experience of England during the last year to require millions of feet of fire hose to supplement the usual equipment of fire departments. Couplings for fire hose are regularly bronze castings of high copper content and substantial fractions of tin and zinc. Couplings for hose being sent to England or proposed for our Civilian Defense Program will require large quantities of these priority metals unless acceptable substitute materials or designs of couplings are worked out. A report from Underwriters' Laboratories, Inc., to OPM, submitting emergency alternate specifications for these fittings, will release maybe two thousand tons of copper for other urgent National Defense needs.

Crash trucks at flying fields, also other fire fighting equipment at army posts and depots, employ special chemicals which must satisfy certain specifications if pump parts are not to become unworkable because of corrosion. Underwriters' Laboratories tests samples of these chemicals for the War Department and reports results of its analyses.

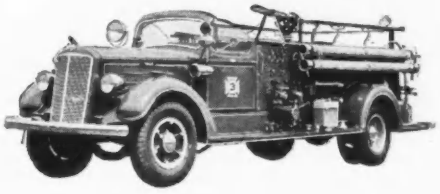
In many areas new Housing Projects accommodate increased personnel either civilian or of the services. Underwriters' Laboratories has inspected installations of heating equipment in many projects reporting protective measures required for safety from fire.

Incendiary bombs are a spectacular as well as effective means of spreading fire and even where a building is not involved may serve briefly as flares to guide hostile aircraft. Experiments at the Laboratories with ways for the control of the fire hazard of magnesium machining processes are being extended to extinguishing methods and equipment for use on incendiary bombs.

Technical experts from the New York and Chicago personnel review plans and proposals for the installation of manual and automatic fire alarm systems in hospital areas of training camps.

Across our broad land are depots, dumps is the technical name, where reserves of artillery ammunition are stored. Many new projects of this kind are under way as a part of the National Defense Program. Because of the Piccatinny Arsenal Disaster in 1925, protection against lightning is a standard safeguarding practice at each of the dumps. Construction contracts specify inspection by Underwriters' Laboratories of the materials and installation methods, including tests of ground resistance. In carrying out this assignment it has been possible to endorse proposals that will effect saving many tons of copper just now so precious for both defense and civilian needs.

Mack Type 505, heavy-duty 500-gallon triple combination pumper, now serving Rockville Center, L. I., N. Y.



IT IS A simple truth that Macks turn in performances far in advance of what is normally expected from modern fire apparatus.

Mack pumpers and trucks not only surpass the requirements of even the most exacting official tests—but show a remarkably high degree of freedom from mechanical failure in actual service.

Mack concentrates on manufacturing Mack fire apparatus in its own factories. We think we can fairly state that no other fire engine is produced under such strict supervision and to such high factor of safety margins.

Mack has the largest resources in the fire apparatus industry. Consequently, Mack is able to maintain a large-scale laboratory research program, which helps keep Mack first in the fire-fighting field.

70 conveniently located direct factory branches provide quick, economical, efficient service for fire apparatus which bears the Mack name. Write for complete information on this superior fire apparatus—today!

MACK MANUFACTURING CORPORATION, Fire Engine Division, New York, N. Y.

The Mack Fire apparatus line includes triple and quadruple pumpers from 200 to 1500 gallon capacity, hose wagons, city service ladder trucks, squad cars—comprising 14 distinct and specialized models. Mack is proud of building the best. We invite comparison. We solicit inquiries.

Mack

CONFLAGRATION AVERTED AT KETCHIKAN ALASKA

Last summer newspapers throughout the United States carried reports of a fire which threatened the business district of Ketchikan, Alaska. The Ketchikan Volunteer Fire Department is a member of the N.F.P.A. Volunteer Firemen's Section. The editors of VOLUNTEER FIREMEN thought that our readers might be interested in how fires are handled in America's important northern territory. Accordingly we asked Chief S. W. Adams of the Ketchikan Volunteer Fire Department to tell us something of this recent fire and to describe his department. The following information is digested from Chief Adams' report. The Territory of Alaska is attracting much attention this year because of the vast defense preparations in the North. Ketchikan is one of the important cities of the Territory.

Ketchikan, Alaska, volunteer firemen shown battling a blaze which threatened the congested business area of the city last summer.

THE closely built business district of Ketchikan, Alaska, was faced with the threat of a conflagration one day this past summer when fire started in a waterfront freight warehouse of the Alaska Steamship Company and spread to adjoining stores along Front Street.

From a fire protection point of view the construction of the twenty-year-old warehouse where the fire started, and the adjoining stores with apartments above, was about the worst that could be anticipated. The buildings were entirely of frame, chiefly constructed of shiplap and tar paper. The large warehouse was built over the water with a single decked planked floor. The lack of fire stops, bulkheads, fire doors or other cut offs permitted the fire to spread rapidly in all directions. It should be mentioned, however, that new buildings constructed in Ketchikan must conform to a modern building code as a fire safety measure. A building similar to the one in which the fire occurred would not be permitted today.

Investigation by the city fire marshal and other fire department officers indicated that the fire was caused by a short circuit in a lighting fixture. The wiring was old and worn due to the constant movement of the building due to the docking of boats. The short circuit ignited flammable material stored on stock shelves.

The fire was discovered by employees of the steamship company who promptly gave an alarm to the fire department by telephone at 10:15 A. M. The fire department attacked the fire from every side at close range and in spite of the inferior construction were able to save a substantial portion of the burned buildings including part of the warehouse. The loss which chiefly consisted of damage to stocks of stores totalled $65,000. Although the nature of the fire did not permit much opportunity for the use of salvage covers, a number of covers were used where possible.

THE fire was effectively attacked from the water side by the local fireboat. The Ketchikan Volunteer Fire Department believes that it is the only volunteer fire department to operate a regular fireboat. The boat has proved very valuable to the community. A great many of the local industrial plants are located along the waterfront. In addition there are hundreds of commercial, fishing, towing and pleasure boats which must be protected, as well as large oil storage properties along the waterfront.

The fireboat is 48 feet in length with a beam of 9 feet and a 6 foot draft. It is driven by a 150 horsepower motor and has a 1500 gallon pump driven by a 135 horse-power Diesel motor. The boat has four hose outlets in addition to two 2-inch deck monitors. It carries 1000 feet of 2½-inch hose, 350 feet of 1½-inch hose, a foam generator, two tons of foam powder, fog nozzles, salvage gear, and other equipment.

On land, the department operates three pieces of equipment and an ambulance. There are two pumpers and one combination hose and ladder truck. Each machine carries 1000 feet of 2½-inch hose, 250 feet of 1½-inch hose, salvage covers, foam generators, portable deluge sets, life lines, first aid kits, and considerable other fire equipment. Ladders are carried up to 50 feet in length. The department has 8000 feet of first class hose.

Pumpers are seldom required to boost pressure for hose lines as there are large mains carrying high pressures throughout the city. In the section where the fire occurred hydrants are spaced less than 200 feet apart on a ten-inch main. Pumpers are sometimes used to take salt water from the harbor or to boost pressures in hilly areas.

About a mile from the business center, convenient to the large oil properties, the department has stored two thirty foot portable foam applicators, four foam generators, and fifteen tons of foam powder.

The Ketchikan department was organized about thirty-five years ago and was operated as an entirely volunteer unit for about twenty years. Starting fifteen years ago three full-time men were employed in the capacity of fire marshal, captain, and lieutenant. Thirty volunteer firemen, including the chief and assistant chief, make up the balance of the regular personnel. An additional thirty men are being trained by the department under the civilian defense program to supplement the regular department if needed.

Meetings are held monthly and drills are held weekly for both regular and civilian members. First aid drills are held one night each week in addition to fire drill work. Drilling is mandatory. Six volunteer firemen sleep at the headquarters station.

Chief Adams considers his department to be a typical well equipped volunteer fire department.

Arson is a favorite weapon of the saboteur...and the automatic sprinkler his deadly enemy. The arsonist's first move, therefore, is to shut off the supply of water to the sprinkler system, or otherwise to render it ineffective. And this he can easily do —unless the sprinkler system is electrically supervised to automatically detect and report such tampering.

A.D.T. Supervision is the most effective safeguard to insure that sprinkler systems are constantly maintained in proper operating condition. The closing of any shut-off valve or any other condition that might impair the sprinkler's effectiveness, whether by accident or malicious intent, is instantly and automatically reported to the Central Station, which immediately investigates every trouble signal and secures corrective action. A.D.T. Supervision makes the sprinkler system function also as an efficient automatic fire alarm system, automatically summoning the fire department the instant a sprinkler head opens.

Write for further information on this and other A.D.T. Electric Protection Services that are helping establishments in all fields to combat the threats of sabotage, fire and burglary.

These Services include *Sprinkler Supervisory and Waterflow Alarm, described here; Aero Automatic Fire Alarm; Invisible Ray Alarm; Holdup Alarms; Burglar Alarms; Emergency Police Call; Watchman Supervision. Descriptive booklets furnished on request.*

A.D.T. SPRINKLER SUPERVISORY AND WATERFLOW ALARM SERVICE

Controlled Companies of **AMERICAN DISTRICT TELEGRAPH CO.** *155 Sixth Avenue, New York, N. Y.*

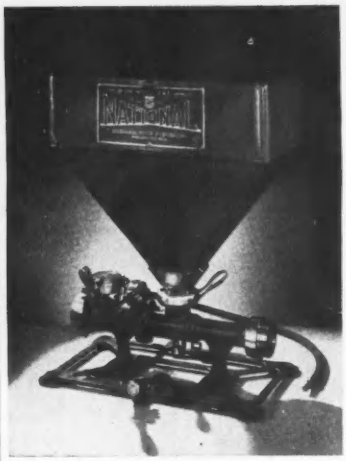
CENTRAL STATION OFFICES IN ALL PRINCIPAL CITIES OF THE UNITED STATES

A·D·T

Electric Protection Services

AGAINST FIRE · BURGLARY · HOLDUP

A NATION-WIDE ORGANIZATION



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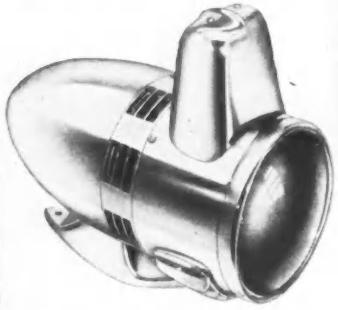
FOR FIRE DEPARTMENTS
NATIONAL
SF-21
FOAM GENERATOR
for running board mounting
Capacity—
1100 gallons of foam per minute
Write for details to:
NATIONAL FOAM SYSTEM
INCORPORATED
1633 Sansom St., Philadelphia, Penna.

FEDERAL
TRAFFIK-KING
MODEL 67
SIREN



This exceptional siren is designed for long service. It combines a brilliant, sweeping red beam of an oscillating light and a powerful deep tone.

Write today for bulletins describing Traffik-King Sirens.

FEDERAL
ELECTRIC CO., Inc.
"SIREN HEADQUARTERS"
8717 SO. STATE STREET *CHICAGO*

Auxiliaries Should Have Same Training as Regular Firemen

IT is not going to be necessary to set up new training programs or procedures for the training of auxiliary firemen. This is indicated by a circular letter on the training of auxiliary firemen, recently sent out to state directors of vocational education and public service training by the U. S. Office of Education.

The letter says in part, "The auxiliary firemen who are to be enrolled for emergency service will need to be trained for many of the duties which are usually performed by regular firemen. It is essential that their training be properly organized and conducted, and that teachers be trained.

"At the present time it is not possible to determine all of the lines of civilian defense for which workers will be needed. It is known, however, that there will be a need for a great many auxiliary firemen. These men will be used to assist the regular firemen in times of emergency, so it is very essential that they be given training for the duties to which they will be assigned.

"The recruiting of persons to serve as auxiliary firemen and the determination of the numbers to be trained are matters that will be handled by state and local councils of defense. In some states steps have already been taken to organize training programs.

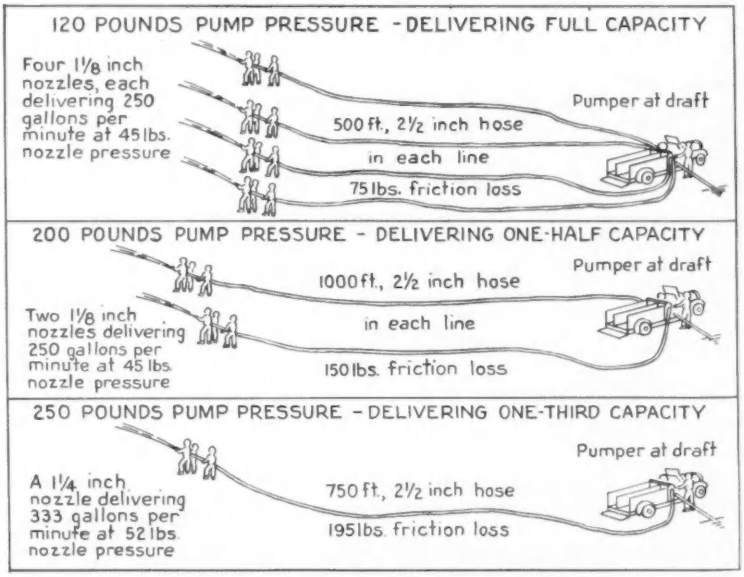
"It is probable that you can provide for the training of auxiliary firemen under the provisions of your regular state plan for using either Smith-Hughes or George-Deen funds, if available. The conditions applying to such use are exactly the same that have, for a number of years, applied to the training of regular firemen. The training may be given in either part-time or evening classes.

"In setting up any vocational education programs, three essential services must be provided. These are: 1. Outlining courses of instruction and providing instructional material. 2. Training persons, who are occupationally competent, to become teachers. 3. Organizing, conducting, and supervising classes. Aid may be given for any of the three phases of work mentioned. In some states much instructional material is already available so that little additional assistance of that kind will be needed."

New York State Issues Fire Defense Manuals

THE New York State Defense Council has issued two civilian defense pamphlets. These, Nos. 1 and 2 respectively in a fire series, have been prepared by Albert H. Hall and James J. Deasy of the New York State Fire Defense Training Program of the Bureau of Public Service Training, State Education Department, Albany.

Organization and Training of Civilian Auxiliary Fire Fighting Forces, 24 pages, contains a syllabus for a course of 24 hours instruction for auxiliary firemen. Industrial Fire Prevention and Protection, 8 pages, contains a short statement for the guidance of fire chiefs in industrial plant contacts.


120 POUNDS PUMP PRESSURE - DELIVERING FULL CAPACITY
Four 1⅛ inch nozzles, each delivering 250 gallons per minute at 45 lbs. nozzle pressure
500 ft., 2½ inch hose in each line
75 lbs. friction loss
Pumper at draft
200 POUNDS PUMP PRESSURE - DELIVERING ONE-HALF CAPACITY
Two 1⅛ inch nozzles delivering 250 gallons per minute at 45 lbs. nozzle pressure
1000 ft., 2½ inch hose in each line
150 lbs. friction loss
Pumper at draft
250 POUNDS PUMP PRESSURE - DELIVERING ONE-THIRD CAPACITY
A 1¼ inch nozzle delivering 333 gallons per minute at 52 lbs. nozzle pressure
750 ft., 2½ inch hose
195 lbs. friction loss
Pumper at draft

WHAT WORK WILL A 1,000-GALLON PUMPER DO?

The 1,000-gallon pumper is a large capacity unit most commonly used to protect high value districts. When operating at capacity it can supply four 1⅛-inch nozzles through 500-foot lines of 2½-inch hose, or three 1¼-inch nozzles through 750-foot lines of 2½-inch hose. When pumping at 200 pounds pressure the 1,000-gallon pumper can supply two 1⅛-inch nozzles through 1,000-foot lines of 2½-inch hose.

N.F.P.A. Membership

Every member receives this handsome membership certificate.

Membership with unusual advantages is available to fire companies and fire departments through the Volunteer Firemen's Section of the National Fire Protection Association. Here's the simple plan:

INDIVIDUAL membership in the National Fire Protection Association costs $10 per year. The membership plan for the Volunteer Firemen's Section is designed to give each fire company the advantages of N.F.P.A. membership. The fire company, as a member, receives at its headquarters a complete set of all regular N.F.P.A. literature, including the *Quarterly* magazine, as issued. In addition, as a special service to the Volunteer Firemen's Section, each fire company holding N.F.P.A. membership is entitled to have copies of the magazine VOLUNTEER FIREMEN sent to the home addresses of 10 firemen each month. If more than 10 firemen want to receive the magazine, an additional $1.00 should be sent in with the membership fee for each fireman in excess of 10 enrolled.

Because of the large amount of material mailed to members, not less than $10 can be accepted from any company.

Texas Organizes Fire Defense Council

TEXAS has established a State Fire Defense Council of eleven members to work with Marvin Hall, State Fire Coordinator. The state has been divided into 26 local defense districts.

NEW PUBLICATIONS

A SUGGESTED Ordinance Regulating Construction and Protection of Piers and Wharves has recently been published by the N.F.P.A. in a 24 page illustrated pamphlet. The pamphlet also includes a 50 year fire record of piers and wharves and a fire protection survey of piers and wharves. In addition to the N.F.P.A. this ordinance has been adopted by the American Association of Port Authorities and the National Board of Fire Underwriters. The price of the pamphlet is 25 cents.

UNDERWRITERS' LABORATORIES, INC., 207 East Ohio Street, Chicago, recently issued Bulletin of Research No. 22 entitled Comparative Burning Tests of Common Plastics. This 16 page illustrated pamphlet describes the results of tests of samples of each of twelve of the more important commercially produced plastics. The tests were designed to give information as to the relative ease of ignition and a rough indication of the comparable burning rate.

Underwriters' Laboratories, Inc., also recently published a 12 page illustrated education bulletin entitled, "On the Safe Side." This bulletin reports an educational radio broadcast made by station WCFL, Chicago. The subject of the broadcast was "Safety in the Theatre," and it covered the prevention of fires, panics, and accidents in theatres through use of safe electrical and projection booth equipment.

THE United States Department of Labor recently issued Volume 3, Bulletin 684, reporting 1938 salaries and hours of labor in municipal fire departments in cities having populations in excess of 25,000 persons located in east north central states. The 96 cities reported on are located in the states of Illinois, Indiana, Michigan, Ohio, and Wisconsin. The fire departments in these cities employed a total of 14,342 persons. The annual payroll was $32,600,000 in 1938.

ANNOUNCEMENT

Mine Safety Appliances Company, Pittsburgh, Pa., has issued Bulletin CA-6m describing the M.S.A. artificial respiration trainer, a new device for standardizing training in artificial respiration.

FYR-FYTER
INSTANT
Saves Human Life

When Mr. and Mrs. Ladd, while returning to their farm home with a new auto, ran off a culvert and overturned, killing Mr. Ladd and pinning Mrs. Ladd under the car which was rapidly being consumed by flames—a neighbor of the Ladds, Mr. A. O. Barrett, came to the rescue with his 1¾-gallon Instant and the flames "died instantly." According to the last report from Dealer Frank Tilton of Washington C. H., Ohio, "I am glad to report that hopes are held for Mrs. Ladd's recovery."

SALESMEN WANTED

If you are interested in adding to your income by spare time work or in building a permanent business for yourself without investment in stock, fixtures, etc., write for our new Dealer's Plan to

THE FYR-FYTER COMPANY
Dept. 20-71 DAYTON, O.

AUTOCAR
FIRE APPARATUS

Custom-building to meet local requirements is our Specialty. Let us bid to your exact specifications the next time you are asking for a Proposal, or write now for literature and photographs.

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THE AUTOCAR COMPANY
BOX VF, ARDMORE, PA.

OUTFITTERS TO FIREMEN SINCE 1836

CAIRNS

WINTER EQUIPMENT

Let us outfit you, from head to foot. Secure the advantages of buying ALL you need from ONE source, with the guarantee of satisfaction of America's oldest firm of firemen's outfitters.

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Helmets, with Cushion Lining and Winter Earlaps
Warm Turnout Coats and Trousers
Felt-Lined Boots
Woolen Mittens, Extra Heavy
Flannel Shirts
Fleece-Lined Rubber Coats
Face Shields

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Write for Catalog 30C

CAIRNS & BROTHER

Outfitters to Firemen Since 1836

444 LAFAYETTE STREET - NEW YORK

Fire Extinguisher Salesmen and Dealers

If you are now selling fire extinguishers or other products in the field of fire protection, you can add substantially to your income by selling a non-competing product that is low in price and which has substantial volume possibilities. This is an entirely new product that has no competition. No investment required. Write and tell us what you are now selling, and territory covered.

•

THE MINUTE COMPANY

6354 Evans Ave., Chicago

Pyrene Prize Letter Contest

CASH PRIZES $10.00 - $3.00 - $2.00 EACH MONTH

THIS is a contest for firemen. Any fireman, whether a private or a chief, whether volunteer or paid, has the same chance to win in this easy contest designed to show what can be done with approved fire extinguishers. You have probably been present at numerous fires where approved fire extinguishers have been successfully used. It's the story we want, not letter writing ability. Get the facts down on paper and we will attend to any re-writing necessary to get the story into the space available in these columns.

The contest is sponsored cooperatively by the Pyrene Manufacturing Company of Newark, N. J., and VOLUNTEER FIREMEN to bring forth the lessons learned from actual fires of the value of fire extinguishers.

FIRST PRIZE—$10.00

A. A. ARLANDSON, *Engineer*
Fire Department, North Bend, Oregon

Gasoline Fire on Boat

On the morning of July 30, I was called to the dock for a fire on a 40-foot trolling boat. The owner of the boat had started to light a gasoline cook stove which exploded scattering fire throughout the cabin and engine room. The owner grabbed a 1-quart carbon tetrachloride extinguisher from its rack near the door and started to use it. A man from a nearby boat also brought a 1-quart carbon tetrachloride extinguisher. When I arrived they had the fire almost under control. I used a 15-pound carbon dioxide extinguisher to extinguish the remaining fire which was around the gasoline tank. The damage amounted to only about $25. But for the two carbon tetrachloride extinguishers it would have been much greater.

SECOND PRIZE—$3.00

MIKE SCOLATTI, *Chief*
Fire Department,
Iron Mountain, Michigan

Smoked at Gasoline Station

Early on the evening of August 20, my son and I were enroute home along Highway U. S. 2, in the city limits. Arriving at a point near a gasoline station on the north side of Iron Mountain, we saw smoke and fire pouring from a coupe parked in the station driveway. I stopped, ran to the station and discovered a Model A Ford coupe in flames. The owner had lighted a cigarette while the tank, situated in the cowl, was being filled. The windshield was open and gas fumes had collected in the car. Fire was shooting around the driver and smoke was pouring from the windows.

I ran into the station, pulled a 1-quart carbon tetrachloride extinguisher from the wall and quickly extinguished the blaze, which by that time had ignited the fill hose and was travelling toward the pump. The driver was not seriously hurt, although badly frightened. "Never again," he said, when warned about smoking or lighting a match while seated in a car at a gasoline pump or anywhere else around a gasoline station.

THIRD PRIZE—$2.00

HARRY SNIDER, *Chief*
Nepean Fire Department,
Westboro, Ontario

Fire in Restaurant

On the evening of August 23, the proprietor of a local restaurant ran into our fire station and said an oil stove in the kitchen was afire. I immediately grabbed a 1½-quart carbon tetrachloride extinguisher. Running into the rear door leading to the kitchen of the restaurant I saw a sheet of flame extending from the floor to the ceiling. Eight or ten pumps from the extinguisher soon smothered the fire. When leaving the restaurant by way of the front door, some twenty patrons were surprised to know there had been a fire. They continued their meals as if nothing had occurred. The occupants of eight apartments upstairs don't know to this day how close they were to the start of a bad fire.

CONTEST RULES

1. Contestants in the Pyrene Prize Letter Contest must be members of their local fire department.
2. Letters are to describe actual experiences where an approved fire extinguisher of any make has saved lives or property.
3. Trade names may be used but will be deleted in publication. Publishers reserve the right to edit winning letters to permit publication.
4. Each contestant automatically vouches for the truth of the facts presented from his own or others' experience.
5. Only one letter may be submitted each month.
6. Letters must be legibly written in ink or typewritten on white paper, one side only. Preference will be given to letters not over 250 words in length.
7. Letters received after the 8th day of the month will be judged in following month's competition.
8. Monthly prizes in cash will be: 1st, $10.00; 2nd, $3.00; and 3rd, $2.00.
9. Address contest letters to Pyrene Prize Letter Contest, National Fire Protection Association, 60 Batterymarch St., Boston, Mass.

CROSBY—FISKE—FORSTER
HANDBOOK OF FIRE PROTECTION

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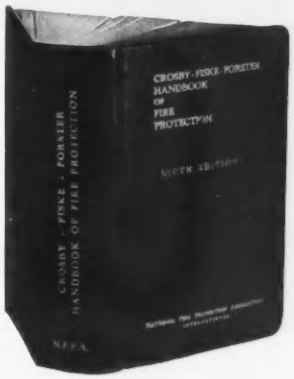
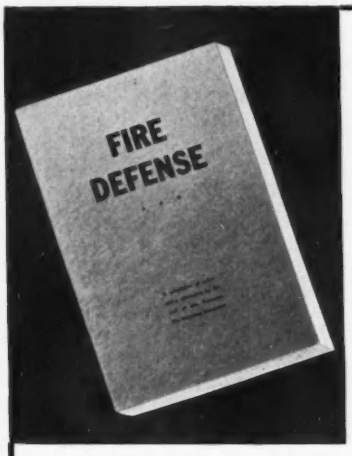


NINTH EDITION

1300 pages, $4.50 Postpaid

The new 9th Edition of the Handbook was issued early this year with a printing of 5,000 copies expected to last for five years. Already the large demand has necessitated a second printing this year.

National Fire Protection Association
INTERNATIONAL
60 Batterymarch St., Boston, Mass.



FIRE DEFENSE

232 pages,
154 illustrations,
price $1.50 postpaid

Leading members of the N.F.P.A., specialists in their fields, have provided authoritative statements on various phases of the problem. There is a comprehensive report on British fire defense measures, including a bibliography of the best British publications on the subject. An expert of the F. B. I. discusses sabotage in one part of the book. Another part is contributed by the Director of Fire Services of the Civilian Defense Committee of the Canadian Province of Ontario. The nation's leading water works expert writes about water systems for protection. A section based on material developed by fire department drill-masters outlines the sort of training which auxiliary firemen should receive. Most important of all, the book tells what must be done to assure that fires, sabotage or accidental, will not interrupt the flow of material off production lines.

11,000 Copies Already Distributed—1941

PART I.—FIRE FROM THE AIR
- The Incendiary Bomb
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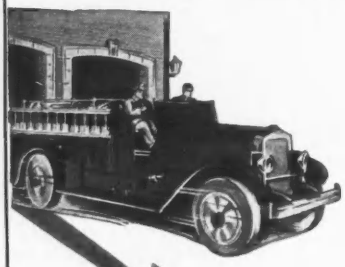
The HEART OF THE FIRE DEPARTMENT



A conflagration hazard exists in practically every community, awaiting only the outbreak of fire under adverse circumstances such as storm, high wind, or skillfully planned sabotage, coupled with a Delayed Alarm to destroy in an hour the result of years of industry. Now, more than ever, with the security of the industrial processes essential to the National Defense at stake, time is the vital element in the control of fire, and only equipment of demonstrated reliability and efficiency should be considered for this vital service.

Gamewell manufactures and installs fire alarm and police systems applicable to every community and industry. We gladly co-operate in planning such protection.

THE GAMEWELL COMPANY

Specialists in Public Safety

NEWTON UPPER FALLS **MASSACHUSETTS**